

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 1 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:


Col. 9, line 16
replace "Sigman"
with --Sigma--.

Col. 30, line 54
replace "6G5"
with --5E8--.

Delete Columns 47-64 and Columns 65-66, lines 1-14, and insert the attached pages.

Signed and Sealed this

Twenty-third Day of December, 2008

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a distinct "D".

JON W. DUDAS
Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 2 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

SEQUENCE LISTING

<110> REFF, MITCHELL E.
KLOETZER, WILLIAM S.
NAKAMURA, TAKEHIKO

<120> GAMMA-1 AND GAMMA-3 ANTI-HUMAN CD23 MONOCLONAL ANTIBODIES AND USE
THEREOF AS THERAPEUTICS

<130> 037003-0275739

<140> 09/292,053

<141> 1999-04-14

<150> 08/803,085

<151> 1997-02-20

<160> 39

<170> PatentIn Ver. 2.1

<210> 1

<211> 390

<212> DNA

<213> Artificial Sequence

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 3 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<220>

<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<220>

<221> misc_feature

<222> (1) .. (57)

<223> leader sequence

<220>

<221> mat_peptide

<222> (58) .. (390)

<220>

<221> CDS

<222> (1) .. (390)

<400> 1

atg gcc tgg act ctg ctc ctc gtc acc ctc ctc act cag gcc aca gga 48
Met Ala Trp Thr Leu Leu Leu Val Thr Leu Leu Thr Gln Gly Thr Gly
-15 -10 -5

tcc tgg gct cag tct gcc ccg act cag cct ccc tct gtg tct ggg tct 96
Ser Trp Ala Gln Ser Ala Pro Thr Gln Pro Pro Ser Val Ser Gly Ser
-1 1 5 10

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 4 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

cct gga cag tcg gtc acc atc tcc tgc act gga acc agc gat gac gtt 144
Pro Gly Gln Ser Val Thr Ile Ser Cys Thr Gly Thr Ser Asp Asp Val
15 20 25

ggt ggt tat aac tat gtc tcc tgg tac caa cac cac cca ggc aaa gcc 192
Gly Gly Tyr Asn Tyr Val Ser Trp Tyr Gln His His Pro Gly Lys Ala
30 35 40 45

ccc aaa ctc atg att tat gat gtc gct aag cgg gcc tca ggg gtc tct 240
Pro Lys Leu Met Ile Tyr Asp Val Ala Lys Arg Ala Ser Gly Val Ser
50 55 60

gat cgc ttc tct ggc tcc aag tct ggc aac acg gcc tcc ctg acc atc 288
Asp Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile
65 70 75

tct ggg ctc cag gct gag gac gag gct gat tat tac tgt tgt tca tat 336
Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Cys Ser Tyr
80 85 90

aca acc agt agc act ttg tta ttc gga aga ggg acc cgg ttg acc gtc 384
Thr Thr Ser Ser Thr Leu Leu Phe Gly Arg Gly Thr Arg Leu Thr Val
95 100 105

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 5 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

cta ggt
Leu Gly
110

390

<210> 2
<211> 130
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<400> 2

Met Ala Trp Thr Leu Leu Val Thr Leu Leu Thr Gln Gly Thr Gly
 -15 -10 -5

Ser Trp Ala Gln Ser Ala Pro Thr Gln Pro Pro Ser Val Ser Gly Ser
 -1 1 5 10

Pro Gly Gln Ser Val Thr Ile Ser Cys Thr Gly Thr Ser Asp Asp Val
 15 20 25

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 6 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Gly Gly Tyr Asn Tyr Val Ser Trp Tyr Gln His His Pro Gly Lys Ala
30 35 40 45

Pro Lys Leu Met Ile Tyr Asp Val Ala Lys Arg Ala Ser Gly Val Ser
50 55 60

Asp Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile
65 70 75

Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Cys Ser Tyr
80 85 90

Thr Thr Ser Ser Thr Leu Leu Phe Gly Arg Gly Thr Arg Leu Thr Val
95 100 105

Leu Gly
110

<210> 3

<211> 423

<212> DNA

<213> Artificial Sequence

<220>

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 7 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<220>

<221> misc_feature

<222> (1)..(57)

<223> leader sequence

<220>

<221> mat_peptide

<222> (58)..(423)

<220>

<221> CDS

<222> (1)..(423)

<400> 3

atg aaa cac ctg tgg ttc ttc ctc ctc ctg gtg gca gct ccc aga tgg 48
Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
-15 -10 -5

gtc ctg tcc cag ctg cag ctg cag gag tgg ggc cca gga gtg gtg aag 96
Val Leu Ser Gln Leu Gln Leu Gln Glu Ser Gly Pro Gly Val Val Lys
-1 1 5 10

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
 APPLICATION NO. : 09/292053
 DATED : April 25, 2006
 INVENTOR(S) : Mitchell E. Reff et al.

Page 8 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

cct tcg gag acc ctg tcc ctc acc tgc gct gtc tct ggt ggc tct gtc	144
Pro Ser Glu Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Gly Ser Val	
15 20 25	
agc agt agt aac tgg tgg acc tgg atc cgc cag ccc cca ggg aag gga	192
Ser Ser Ser Asn Trp Trp Thr Trp Ile Arg Gln Pro Pro Gly Lys Gly	
30 35 40 45	
ctg gag tgg att gga cgt atc tct ggt agt ggt ggg gcc acc aac tac	240
Leu Glu Trp Ile Gly Arg Ile Ser Gly Ser Gly Gly Ala Thr Asn Tyr	
50 55 60	
aac ccg tcc ctc aag agt cga gtc atc att tca caa gac acg tcc aag	288
Asn Pro Ser Leu Lys Ser Arg Val Ile Ile Ser Gln Asp Thr Ser Lys	
65 70 75	
aac cag ttc tcc ctg aac ctg aac tct gtg acc gcc gcg gac acg gcc	336
Asn Gln Phe Ser Leu Asn Leu Asn Ser Val Thr Ala Ala Asp Thr Ala	
80 85 90	
gtg tat tac tgt gcc aga gat tgg gcc caa ata gct gga aca acg cta	384
Val Tyr Tyr Cys Ala Arg Asp Trp Ala Gln Ile Ala Gly Thr Thr Leu	
95 100 105	
ggc ttc tgg ggc cag gga gtc ctg gtc acc gtc tcc tca	423
Gly Phe Trp Gly Gln Gly Val Leu Val Thr Val Ser Ser	
110 115 120	

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 9 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 4

<211> 141

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<400> 4

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
-15 -10 -5

Val Leu Ser Gln Leu Gln Leu Gln Glu Ser Gly Pro Gly Val Val Lys
-1 1 5 10

Pro Ser Glu Thr Leu Ser Leu Thr Cys Ala Val Ser Gly Gly Ser Val
15 20 25

Ser Ser Ser Asn Trp Trp Thr Trp Ile Arg Gln Pro Pro Gly Lys Gly
30 35 40 45

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 10 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Glu Trp Ile Gly Arg Ile Ser Gly Ser Gly Gly Ala Thr Asn Tyr
50 55 60

Asn Pro Ser Leu Lys Ser Arg Val Ile Ile Ser Gln Asp Thr Ser Lys
65 70 75

Asn Gln Phe Ser Leu Asn Leu Asn Ser Val Thr Ala Ala Asp Thr Ala
80 85 90

Val Tyr Tyr Cys Ala Arg Asp Trp Ala Gln Ile Ala Gly Thr Thr Leu
95 100 105

Gly Phe Trp Gly Gln Gly Val Leu Val Thr Val Ser Ser
110 115 120

<210> 5

<211> 387

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 11 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<220>
<221> misc_feature
<222> (1)..(66)
<223> leader sequence

<220>
<221> mat_peptide
<222> (67)..(387)

<220>
<221> CDS
<222> (1)..(387)

<400> 5

atg	gac	atg	agg	gtc	ccc	gct	cag	ctc	ctg	ggg	ctc	ctt	ctg	ctc	tgg	48
Met	Asp	Met	Arg	Val	Pro	Ala	Gln	Leu	Leu	Gly	Leu	Leu	Leu	Leu	Trp	
	-20						-15					-10				
ctc	cca	ggg	gcc	aga	tgt	gac	atc	cag	atg	acc	cag	tct	cca	tct	tcc	96
Leu	Pro	Gly	Ala	Arg	Cys	Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	
	-5				-1	1				5					10	
ctg	tct	gca	tct	gta	ggg	gac	aga	gtc	acc	atc	act	tgc	agg	gca	agt	144
Leu	Ser	Ala	Ser	Val	Gly	Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	
				15				20						25		

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 12 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

cag gac att agg tat tat tta aat tgg tat cag cag aaa cca gga aaa 192
Gln Asp Ile Arg Tyr Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys
30 35 40

gct cct aag ctc ctg atc tat gtt gca tcc agt ttg caa agt ggg gtc 240
Ala Pro Lys Leu Leu Ile Tyr Val Ala Ser Ser Leu Gln Ser Gly Val
45 50 55

cca tca agg ttc agc ggc agt gga tct ggg aca gag ttc act ctc acc 288
Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr
60 65 70

gtc agc agc ctg cag cct gaa gat ttt gcg act tat tac tgt cta cag 336
Val Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln
75 80 85 90

gtt tat agt acc cct cgg acg ttc ggc caa ggg acc aag gtg gaa atc 384
Val Tyr Ser Thr Pro Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
95 100 105

aaa 387
Lys

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 13 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 6
<211> 129
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<400> 6

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
-20 -15 -10

Leu Pro Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
-5 -1 1 5 10

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
15 20 25

Gln Asp Ile Arg Tyr Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys
30 35 40

Ala Pro Lys Leu Leu Ile Tyr Val Ala Ser Ser Leu Gln Ser Gly Val
45 50 55

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 14 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr
60 65 70

Val Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln
75 80 85 90

Val Tyr Ser Thr Pro Arg Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
95 100 105

Lys

<210> 7

<211> 411

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<220>

<221> misc_feature

<222> (1)..(57)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 15 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<223> leader sequence

<220>

<221> mat_peptide

<222> (58) .. (411)

<220>

<221> CDS

<222> (1) .. (411)

<400> 7

atg	gag	ttt	ggg	ctg	agc	tgg	gtt	ttc	ctt	gtt	cct	ctt	ttg	aaa	ggt	48
Met	Glu	Phe	Gly	Leu	Ser	Trp	Val	Phe	Leu	Val	Pro	Leu	Leu	Lys	Gly	
			-15				-10							-5		

gtc	cag	tgt	gag	gtg	cag	ctg	gtg	gag	tct	ggg	ggc	ggc	ttg	gca	aag	96
Val	Gln	Cys	Glu	Val	Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Ala	Lys	
	-1	1				5					10					

cct	ggg	ggg	tcc	ctg	aga	ctc	tcc	tgc	gca	gcc	tcc	ggg	ttc	agg	ttc	144
Pro	Gly	Gly	Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Arg	Phe	
	15					20					25					

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 16 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

acc ttc aat aac tac tac atg gac tgg gtc cgc cag gct cca ggg cag 192
Thr Phe Asn Asn Tyr Tyr Met Asp Trp Val Arg Gln Ala Pro Gly Gln
30 35 40 45

ggg ctg gag tgg gtc tca cgt att agt agt agt ggt gat ccc aca tgg 240
Gly Leu Glu Trp Val Ser Arg Ile Ser Ser Ser Gly Asp Pro Thr Trp
50 55 60

tac gca gac tcc gtg aag ggc aga ttc acc atc tcc aga gag aac gcc 288
Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Glu Asn Ala
65 70 75

aac aac aca ctg ttt ctt caa atg aac agc ctg aga gct gag gac acg 336
Asn Asn Thr Leu Phe Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
80 85 90

gct gtc tat tac tgt gcg agc ttg act aca ggg tct gac tcc tgg ggc 384
Ala Val Tyr Tyr Cys Ala Ser Leu Thr Thr Gly Ser Asp Ser Trp Gly
95 100 105

cag gga gtc ctg gtc acc gtc tcc tca 411
Gln Gly Val Leu Val Thr Val Ser Ser
110 115

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 17 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 8
<211> 137
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Mature peptide is derived from Old World Monkey (macaque); leader sequence is an artificial sequence to facilitate cloning

<400> 8

Met Glu Phe Gly Leu Ser Trp Val Phe Leu Val Pro Leu Leu Lys Gly
 -15 -10 -5

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Ala Lys
 -1 1 5 10

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Arg Phe
 15 20 25

Thr Phe Asn Asn Tyr Tyr Met Asp Trp Val Arg Gln Ala Pro Gly Gln
 30 35 40 45

Gly Leu Glu Trp Val Ser Arg Ile Ser Ser Ser Gly Asp Pro Thr Trp
 50 55 60

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 18 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Glu Asn Ala
65 70 75

Asn Asn Thr Leu Phe Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
80 85 90

Ala Val Tyr Tyr Cys Ala Ser Leu Thr Thr Gly Ser Asp Ser Trp Gly
95 100 105

Gln Gly Val Leu Val Thr Val Ser Ser
110 115

<210> 9

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 9

atcacagatc tctcaccatg gacatgaggg tccccgtca g

41

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 19 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 10
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 10

atcacagatc tctcaccatg aggctcctg ctcag

35

<210> 11
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 11

atcacagatc tctcaccatg gaarccccag ckcag

35

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 20 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 12
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12

atcacagatc tctcaccatg gtgttgcaga cccaggtc

38

<210> 13
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13

ggtgcagcca ccgtagcttt gatytccasc tt

32

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 21 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 14
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 14

atcacagatc tctcaccatg rcctgstccc ctct

34

<210> 15
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15

atcacagatc tctcaccatg gcctgggctc ygct

34

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 22 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 16
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
atcacagatc tctcaccatg gcmtggaycc ctctc

35

<210> 17
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
cttgggctga cctaggacgg t

21

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 23 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 18
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 18

gcgactaagt cgaccatgga ctggacctgg

30

<210> 19
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19

gcgactaagt cgaccatgaa acacctgtgg

30

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 24 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 20
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20

gcgactaagt cgaccatgga gtttgggctg agc

33

<210> 21
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21

gcgactaagt cgaccatggg gtcaaccgcc atc

33

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 25 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 22
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 22

gcgactaagt cgaccatgtc tgtctccttc etc

33

<210> 23
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 23

gccaggggga agaccgatgg gcccttggtg ctagctgagg agacgg

46

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 26 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 24
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 24

gatgggccct tgggtgctagc tgaggagacg g

31

<210> 25
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 25

ggtgctagct gaggagacgg tgaccaggac tccctggccc cagaagccta g

51

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 27 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 26
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 26

atttaggtga cactata

17

<210> 27
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 27

gttttcccag tcacga

16

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 28 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 28
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 28

atatacgact cactataggg

20

<210> 29
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 29

ccgtcagatc gcctggagac gccca

24

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 29 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 30

gcagttccag atttcaactg

20

<210> 31
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 31

ccaggccact gtcacggctt c

21

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 30 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Primer

<400> 32

cagagctggg tacgtcctca

20

<210> 33
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 33

gccccccagag gtgctcttgg

20

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 31 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 34
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 34

acacagaccc gtcgacatgg

20

<210> 35
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 35

gctctcggag gtgctcctgg

20

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 32 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 36
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 36

acagaccggt cgaccatgga gtttgggctg

30

<210> 37
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 37

ccccttggtg ctagctgagg agacggt

27

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,033,589 B1
APPLICATION NO. : 09/292053
DATED : April 25, 2006
INVENTOR(S) : Mitchell E. Reff et al.

Page 33 of 33

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 38
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 38

agagagaacg ccaagaacac actgttt

27

<210> 39
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 39

aaacagtgtg ttcttggcgt tctctct

27